Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3

Table 1 -- Long-Term Operation, Maintenance, and Monitoring (OM&M) Present Worth Cost Estimate

Item No.	Operation and Maintenance Plan Activity Description	Cost
1	Long-Term Landfill Gas Monitoring Program Implementation Present Worth	$13,690.34
2	Long-Term Groundwater Sampling Program Implementation Present Worth	$110,069.51
3	Long-Term Landfill Inspection Program Implementation Present Worth	$15,511.11
4	Long-Term Landfill Maintenance Program Implementation Present Worth	$117,692.79
	Present Worth Total Long-Term OM&M Program Implementation Cost :	**$256,963.75**

Notes:

1) The long-term OM&M period includes calendar years 2012 through 2042.
2) OM&M activities include landfill gas monitoring, groundwater sampling, landfill inspection, and landfill maintenance.
3) The landfill gas monitoring program includes conducting a field program to measure landfill gas concentrations at the 17 permanent gas probes and 18 permanent gas vents located at the King Highway Landfill (KHL) by a qualified field technician, and the development and submittal of a landfill gas monitoring report to the Michigan Department of Environmental Quality (MDEQ) and the U.S. Environmental Protection Agency (USEPA).
4) The annual groundwater sampling program includes the collection of groundwater samples at the 15 existing groundwater monitoring wells located at the KHL by a qualified field technician; laboratory analysis of the samples for PCB concentrations; validation of the analytical data received from the laboratory; and development and submittal of the groundwater sampling report to MDEQ and USEPA.
5) The landfill inspection program includes visual observations of the physical condition of various components of the landfill (i.e., cover system, stormwater management system, berm stabilization measures, landfill gas management system, groundwater monitoring system, and site access roads and security systems); documentation of the results of the inspection; and submittal of the post-remediation inspection form to MDEQ and USEPA.
6) The landfill maintenance program includes the performance of any necessary repairs based on the observations documented during the landfill inspection program, as well as routine mowing.
7) The Present Worth Total Long-term OM&M Program Implementation Cost is equal to the sum of the present worth of long-term landfill gas monitoring program, groundwater sampling program, landfill Inspection program, and landfill maintenance program implementation costs.
8) Refer to Tables 1A through 1D for additional information regarding the costs associated with Long-Term Landfill Gas Monitoring Program Implementation; Long-Term Groundwater Sampling Program Implementation; Long-Term Landfill Inspection Program Implementation; and Long-Term Landfill Maintenance Program Implementation, respectively.

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3

Table 1A -- Long-Term Landfill Gas Monitoring Program Implementation

Total Annual Cost for Past Landfill Gas Monitoring Activities	
2007	$26,947.39
2008	$23,922.90
2009	$16,739.30
2010	$9,831.34
2011	$9,969.94
Average Cost for Annual Landfill Gas Monitoring:	$9,900.64[1]

Future Cost for Long-Term Landfill Gas Monitoring Activities	
2012	$9,900.64
2013	$4,950.32
2014	$5,197.84
2015	$2,598.92
2016	$2,598.92
2017	$2,728.86
2018	$2,728.86
2019	$2,728.86
2020	$2,865.31
2021	$2,865.31
2022	$2,865.31
2023	$3,008.57
2024	$3,008.57
2025	$3,008.57
2026	$3,159.00
2027	$3,159.00
2028	$3,159.00
2029	$3,316.95
2030	$3,316.95
2031	$3,316.95
2032	$3,482.80
2033	$3,482.80
2034	$3,482.80
2035	$3,656.94
2036	$3,656.94
2037	$3,656.94
2038	$3,839.79
2039	$3,839.79
2040	$3,839.79
2041	$4,031.77
2042	$4,031.77

Total Cost for Long-Term Landfill Gas Monitoring:	$111,484.84	
Present Worth of Long-Term Landfill Gas Monitoring:		**$13,690.34**

Notes:

1) The future cost for long-term landfill gas monitoring activities is based on the average cost for 2010 through 2011 annual landfill gas monitoring activities, as these costs better reflect the current practices used for landfill gas monitoring. The future cost assumes that the groundwater monitoring, landfill gas monitoring, and landfill inspection events will be conducted concurrently, to the extent possible, to reduce travel costs by combining field efforts.

2) It is assumed that the future annual cost for landfill gas monitoring activities during the 30-year monitoring period will increase by 5% every 3 years to account for cost increases.

3) Future landfill gas monitoring activities for the 30-year long-term monitoring period are assumed to include quarterly monitoring in 2012, semi-annual monitoring in 2013 and 2014, and annual landfill gas monitoring for the remainder of the long-term monitoring period (i.e., 2015 through 2042) based on Section 3.4 of the Draft Final Operation and Maintenance Plan.

4) Section 3.4 states that if, after two years of continued quarterly monitoring, methane is not detected above the lower explosive limit (LEL) at any of the monitoring locations outside of Georgia-Pacific's property, Georgia-Pacific will propose to continue landfill gas monitoring at a semi-annual frequency. Section 3.4 also states that if, after two years of semi-annual monitoring, methane is not detected above the LEL at any of the monitoring locations outside of Georgia-Pacific's property, Georgia-Pacific will propose to continue landfill gas monitoring at an annual frequency for the remainder of the long-term monitoring period. Methane has not been detected above the LEL at any of the monitoring locations outside of Georgia-Pacific's property since May 2008.

5) The Present Worth of Long-Term Landfill Gas Monitoring was calculated using the present worth analysis formula P = F x (P/F, i, n), where F = $111,484.84, P = $13,690.34; i = 7%, n = 30, and (P/F, i, n) = 0.1228.

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3

Table 1B -- Long-Term Groundwater Sampling Program Implementation

Total Annual Cost for Past Groundwater Sampling Activities	
2007	$177,636.55
2008	$160,099.34
2009	$112,024.51
2010	$127,623.10
2011	$22,413.07

Future Cost for Long-Term Groundwater Sampling Activities	
2012	$22,413.07
2013	$22,413.07
2014	$23,533.72
2015	$23,533.72
2016	$23,533.72
2017	$24,710.41
2018	$24,710.41
2019	$24,710.41
2020	$25,945.93
2021	$25,945.93
2022	$25,945.93
2023	$27,243.23
2024	$27,243.23
2025	$27,243.23
2026	$28,605.39
2027	$28,605.39
2028	$28,605.39
2029	$30,035.66
2030	$30,035.66
2031	$30,035.66
2032	$31,537.44
2033	$31,537.44
2034	$31,537.44
2035	$33,114.31
2036	$33,114.31
2037	$33,114.31
2038	$34,770.03
2039	$34,770.03
2040	$34,770.03
2041	$36,508.53
2042	$36,508.53

Total Cost for Long-Term Groundwater Sampling:	$896,331.55
Present Worth of Long-Term Groundwater Sampling:	**$110,069.51**

Notes:

1) The future cost for long-term groundwater sampling activities is based on the 2011 cost for annual groundwater sampling activities. The past groundwater sampling costs from 2007 through 2010 were not used in generating future sampling costs, as quarterly groundwater monitoring for additional constituents beyond PCBs was conducted; and does not accurately reflect the future groundwater sampling costs. It is assumed that future groundwater sampling events will be conducted concurrently with the landfill gas monitoring and inspection events, to the extent possible, to reduce travel costs by combining field efforts.
2) It is assumed that the annual cost for groundwater sampling activities during the 30-year long-term monitoring period will increase by 5% every 3 years to account for cost increases.
3) Future groundwater sampling activities for the 30-year long-term monitoring period are assumed to include annual sampling for the remainder of the long-term monitoring period (i.e., 2012 through 2042) based on Section 4.5 of the Draft Final Operation and Maintenance Plan.
4) The Present Worth of Long-Term Groundwater Sampling was calculated using the present worth analysis formula P = F x (P/F, i, n), where F = $896,331.55, P = $110,069.51, i = 7%, n = 30, and (P/F, i, n) = 0.1228.

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3

Table 1C -- Long-Term Landfill Inspection Program Implementation

Total Annual Cost for Past Landfill Inspection Activities	
2007	$2,639.00
2008	$1,237.50
2009	$559.76
2010	$456.80
2011	$641.08

Future Cost for Long-Term Landfill Inspection Activities	
2012	$4,567.27
2013	$4,704.29
2014	$4,845.42
2015	$4,990.78
2016	$5,140.50
2017	$2,647.36
2018	$2,726.78
2019	$2,808.58
2020	$2,892.84
2021	$2,979.63
2022	$3,069.01
2023	$3,161.08
2024	$3,255.92
2025	$3,353.59
2026	$3,454.20
2027	$3,557.83
2028	$3,664.56
2029	$3,774.50
2030	$3,887.74
2031	$4,004.37
2032	$4,124.50
2033	$4,248.23
2034	$4,375.68
2035	$4,506.95
2036	$4,642.16
2037	$4,781.42
2038	$4,924.87
2039	$5,072.61
2040	$5,224.79
2041	$5,381.54
2042	$5,542.98

Total Cost for Long-Term Landfill Inspections:	$126,311.99
Present Worth of Long-Term Landfill Inspections:	**$15,511.11**

Notes:

1) The past cost for long-term landfill inspections is based on the average cost for 2007 through 2011 quarterly landfill inspections provided by Terra Contracting, LLC.
2) Landfill inspections are presumed to be performed by ARCADIS beginning is 2012. It is assumed that future landfill inspection, gas monitoring, and groundwater sampling events will be conducted concurrently, to the extent possible, to reduce travel costs by combining field efforts.
3) It is assumed that the future annual cost for landfill inspections during the 30-year monitoring period will increase by 3% every year to account for cost increases.
4) Future landfill inspections are assumed to include quarterly inspections to be conducted for the first five years during the long-term monitoring period (i.e., 2012 through 2016), and semi-annual inspections for the remainder of the long-term monitoring period (i.e., 2017 through 2042), in accordance with Section 6.2 of the Draft Final Operation and Maintenance Plan.
5) The Present Worth of Long-Term Landfill Inspections was calculated using the present worth analysis formula P = F x (P/F, i, n), where F = $126,311.99, P = $15,511.11, i = 7%, n = 30, and (P/F, i, n) = 0.1228.

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3

Table 1D -- Long-Term Landfill Maintenance Program Implementation

Total Annual Cost for Past Landfill Maintenance Activities	
2007	$23,220.50
2008	$20,077.76
2009	$18,231.56
2010	$11,056.50
2011	$23,249.58
Average Cost for Annual Landfill Maintenance:	$19,167.18[1]

Future Cost for Long-Term Landfill Maintenance Activities	
2012	$19,167.18
2013	$19,742.20
2014	$20,334.46
2015	$20,944.50
2016	$21,572.83
2017	$22,220.01
2018	$22,886.62
2019	$23,573.21
2020	$24,280.41
2021	$25,008.82
2022	$25,759.09
2023	$26,531.86
2024	$27,327.82
2025	$28,147.65
2026	$28,992.08
2027	$29,861.84
2028	$30,757.70
2029	$31,680.43
2030	$32,630.84
2031	$33,609.77
2032	$34,618.06
2033	$35,656.60
2034	$36,726.30
2035	$37,828.09
2036	$38,962.93
2037	$40,131.82
2038	$41,335.77
2039	$42,575.85
2040	$43,853.12
2041	$45,168.72
2042	$46,523.78

Total Cost for Long-Term Landfill Maintenance:	$958,410.33
Present Worth of Long-Term Landfill Maintenance:	**$117,692.79**

Notes:

1) The future cost for long-term landfill maintenance activities is based on the average cost for 2007 through 2011 landfill maintenance. The 2007 through 2011 landfill maintenance costs were provided by Terra Contracting, LLC.
2) It is assumed that the future annual cost for landfill maintenance during the 30-year monitoring period will increase by 3% every year to account for cost increases.
3) Future landfill maintenance is assumed to include necessary repairs and maintenance activities based on observations documented during the landfill inspections (including mowing, animal control, fence and sign repair, etc.), in accordance with Section 7 of the Draft Final Operation and Maintenance Plan.
4) The Present Worth of Long-Term Landfill Maintenance was calculated using the present worth analysis formula P = F x (P/F, i, n), where F = $958,410.33, P = 117, 692.79, i = 7%, n = 30, and (P/F, i, n) = 0.1228.

Georgia-Pacific LLC
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
King Highway Landfill Operable Unit 3

Table 2 -- Past Five Years of Operation, Maintenance, and Monitoring (OM&M) Costs

Year	Annual Cost for Landfill Gas Monitoring & Groundwater Sampling	Annual Cost for Landfill Inspections and Maintenance	Total Annual Cost for OM&M Activities
2007	$204,583.94	$23,890.66	$228,474.60
2008	$184,022.24	$11,513.30	$195,535.54
2009	$128,763.81	$18,791.32	$147,555.13
2010	$137,454.44	$21,315.26	$158,769.70
2011	$32,383.01	$25,859.50	$58,242.51

Notes:

1) The Annual Cost for Landfill Gas Monitoring & Groundwater Sampling is based on 2007 through 2011 invoices from ARCADIS billed to Georgia-Pacific LLC for the implementation of landfill gas monitoring and groundwater sampling at the King Highway Landfill (KHL).
2) The Annual Cost for Landfill Inspections and Maintenance is based on 2007 through 2011 costs provided by Terra Contracting, LLC for the implementation of landfill inspections and maintenance activities at the KHL.
3) The large decrease in the 2011 Annual Cost for Landfill Gas Monitoring & Groundwater Sampling was due to the modification to the groundwater sampling program, which included a reduction in sampling frequency from quarterly to annual monitoring and to only PCB analysis.